DISTRIBUTION:
Central File
DN 50-320
NRC PDR
Local PDR
TMI HQ r/f
TMI Site r/f
BBoger
EJordan
JPartlow
FSchroeder
WTravers
MMasnik
JThomas
TMoslak
Service List

December 4, 1987
NRC/TMI 87-085

Docket No. 50-320

Mr. F. R. Standerfer
Vice President/Director, TMI-2
GPU Nuclear Corporation
P. O. Box 480
Middletown, PA 17057

Dear Mr. Standerfer:

Subject: Safety Evaluation Report For Use of Non-Borated Water in the Canister Loading Decontamination System

References: (a) Letter 4410-87-L-0180/0274, F. Standerfer to USNRC, Safety Evaluation Report for Use of Non-Borated Water in the Canister Loading Decontamination System, dated December 2, 1987
(b) Letter NRC/TMI 86-079, W. Travers to F. Standerfer, Defueling Canister Technical Evaluation Report, dated August 12, 1986

Reference (a) submitted for NRC staff review and approval a safety evaluation in support of your request to use non-borated water for defueling canister decontamination. We have reviewed your submittal and determined that your proposed system modifications are adequate to prevent inadvertent communication of the non-borated water source with the reactor coolant system (RCS). Thus the probability of an RCS boron dilution transient as a result of the activity has not been increased. We have also evaluated the potential for inadvertent criticality in the 'A' spent fuel pool (SFP) due to boron dilution. Reference (b) includes an analysis of the criticality safety of the defueling canisters. That analysis shows that defueling canisters stored in the design configuration in the SFP storage racks are subcritical even if a single can has experienced the worst case geometric deformation due to a drop accident, and the SFP has been completely deborated. The analysis also shows that a loaded canister dropped on top of another loaded canister in the storage racks is subcritical, provided the water in the SFP is borated. The analysis does not support a critically safe configuration in this case in non-borated water. Even though this presents an extremely unlikely scenario, action is required to preclude such an event. We have evaluated this event based on the following considerations.

OFFICE ▶							
SURNAME ▶							
DATE ▶							

Canister decontamination uses a volume of about 200 gallons of water per canister. If two shipping casks are loaded in one week, a volume of about 2800 gallons of demineralized water would be added to the SFP per week. This is small in comparison to the total volume of the SFP. Thus sufficient deboration to present a criticality hazard is not likely to occur during the weekly SFP sampling intervals. Local deboration, however, is a potential concern due to the stagnant nature of the pool and density difference of bulk pool water and heated non-borated water. Operation of the defueling water cleanup system (DWCS) on the spent fuel pool at sufficient flow rates to assure mixing of the water will preclude such a localized deboration transient. However, in discussion with members of your staff, it was stated that you do not intend to operate DWCS continuously during canister decontamination. We will therefore require daily local dip samples of the SFP water in the vicinity of the decontamination station to verify that the boron concentration is not reduced below the Technical Specification limits when the DWCS is not operating as discussed above. We understand based on discussions that this is acceptable to your staff.

Based on the above, we have concluded that your proposal to operate the canister decontamination system with non-borated water does not pose a significant risk to the public health safety, nor does it create potential environmental impacts outside the bounds of those previously analyzed, provided the restrictions discussed are imposed in accordance with approved administrative and operating procedures.

We therefore approve your Safety Evaluation for Use of Non-Borated Water in the Canister Loading Decontamination System subject to the previously mentioned restrictions.

Sincerely,

ORIGINAL SIGNED BY:
William D. Travers

William D. Travers, Director
TMI-2 Cleanup Project Directorate

cc: T. F. Demmitt
R. E. Rogan
M. E. Pettis
S. Levin
H. D. Hurst
A. W. Miller
Service Distribution List
(See attached)

OFFICE ▶	TMICPD	TMICPD						
SURNAME ▶	JAThomas;wa	WDTravers						
DATE ▶	12/4/87	12/4/87						